

AD-A131 633

150 HOUR ENGINE TEST OF CORROSION INHIBITED
MIL-L-23699C OIL(U) ARMY TSARCOM DEPOT ENGINEERING
SUPPORT BRANCH CORPUS CHRISTI A... B G WILSON JUN 83




1/1

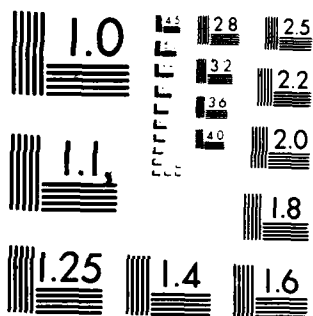
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MRDP-6297-1

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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963-A



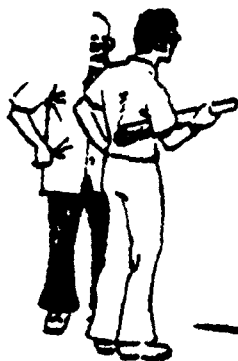
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RCM AND DEPOT ENGINEERING SUPPORT DIVISION

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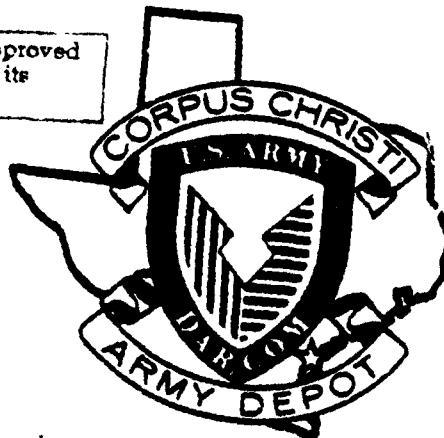


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DEPOT ENGINEERING SUPPORT BRANCH at CCAD

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JUNE 1983

TECHNICAL REPORT NR: MRDP-6297-1

Billy S. Wilson

Chief, Power Plant & PWTN Sec @ CCAD

TSARCOM DEPOT ENGINEERING SUPPORT BRANCH
POWER PLANTS SECTION
DRSTS-MRDP
CORPUS CHRISTI ARMY DEPOT
CORPUS CHRISTI, TEXAS 78419

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11-3-1-1-P

PURPOSE:

To provide results of engine test on a modified version of MIL-L-23699C Oil (MERADCOM is the proponent for this test).

BACKGROUND:

1. This office conducted a 150 hour qualification at CCAD, during the period 16 through 29 January 1981, using a T53-L-13B engine in a CCAD Test Cell.

2. The primary objectives of the test was to evaluate MIL-L-23699 oil with a corrosion inhibitor additive (prepared by MERADCOM) and to qualify a new vendor source for First and Second Stage Gas Producer Turbine Blades. Several repairs to parts were also being evaluated. This report will address the test oil only.

3. The CCAD Test Cell Lubrication System is massive in comparison to an Aircraft Lubrication System such a system could not produce realistic test results. A simulated aircraft lubrication system was designed, fabricated, and used to recently engine test an on-line ferrograph analyzer. This system was patterned after the UH-1H aircraft, having the same oil capacity and using the same oil cooler and oil tank. See Appendix A for further details. The simulated aircraft lubrication system was used during the 150 hour qualification test. See Appendix A.

TEST PLAN:

1. The 150 hour qualification test was conducted in accordance with Lycoming Test Specification XT5313.4c with the following changes:

a. Power setting were established where possible from TIT maximum limit rather than SFC.

b. Seven oil samples were taken during each six hour cycle of test and submitted to the laboratory for analysis.

c. The cycle time was changed to permit two shift operation without the two hour cool down time.

d. The engine testing was conducted manually as the test sequences required are not in the computer program. Only the initial calibration run at the beginning of the test and at the conclusion were computer runs. See Appendix B and C.

2. The Lycoming test specification is not included in the report but is available. It specifies engine loads and times to be run at each power setting. The test is more severe than would normally be experienced during aircraft operation. The PEI provides special instructions for CCAD during engine assembly, test and disassembly. See Appendix B.

-1-

TEST AND OBSERVATIONS:

1. The initial calibration of the engine indicated it would produce rated power at 99.07 NI speed and 1075°F MGT at standard day seal level condition which is average. Oil temperatures from the #2 and #3 bearing packages were normal. Oil consumption for the calibration run was zero. See Appendix C.
2. The first cycle of the test was run with no unusual problems. The engine at maximum power developed 1437 horsepower with a 48°F. ambient. The bearing oil out temperatures were: #2 bearing package 354°F, #3 bearing package 331°F. These temperatures were obtained using the aircraft duplicated oil system. This system also uses bleed air from the engine to run the oil cooler blower fan.
3. The 150 hours of testing was performed with no unusual problems. There was no noticeable oil consumption, make up oil was added for that removed for laboratory testing. The engine vibration was normal and did not change during the test. Bearing oil temperatures during testing did not significantly increase.
4. The engine performance after completion of the 150 hour test had decreased slightly; it produced normal rated power with an NI speed of 99.7% and 1110°F MGT. This is well within normal degradation as the compressor picks up some oil and dust during operation which decreases compressor efficiency. See Appendix E.
5. Seven (7) oil samples were taken each six (6) hour cycle. These were carried to the laboratory and a spectrographic analysis run on each sample. There were no significant increases of any metals during the test. The results were discussed with the laboratory personnel. See Appendix F for an example.
6. A one quart sample was taken after 75 hours of the test was completed and also after 150 hours. These samples were sent to the laboratory with a request for foaming characteristics test per ASTM-D-892-72. The results are given in Appendix G.
7. The engine was disassembled after completion of the test and all parts laid out for inspection. Personnel from MERADCOM visited CCAD and inspected the gears, bearings and seals. All gears and bearings were in good condition with no unusual discoloration or wear. The seals did not indicate any abnormal wear or leakage. The number one seal which is the most likely to leak during test indicated no leakage and only a minor amount of coking.

ANALYSIS:

1. Tests showed no adverse affects in using this modified version of MIL-L-23699C, observations during test and after engine disassembly, indicated this modified oil functioned (cleaned, cooled, and lubricated) as good as the standard MIL-L-23699C oil. There was no unusual coking of seals or wear on gears or bearings.

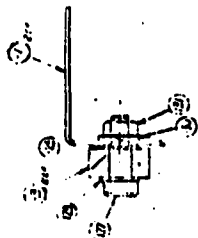
2. This test did not address corrosion resistance. A comparative corrosion resistance test of the modified vs. standard MIL-L-23699 oils will be (or has been) conducted by MERADCOM. If further testing of the long range effects of this modified oil is desired, suggest Mr. Bill Masters, TSARCOM, be contacted at AV 693-3041. Mr. Masters can have the oil tested in aircraft at the test board (Fort Rucker, AL). This would provide the quickest method of extended service testing the modified oil.

APPENDIX A

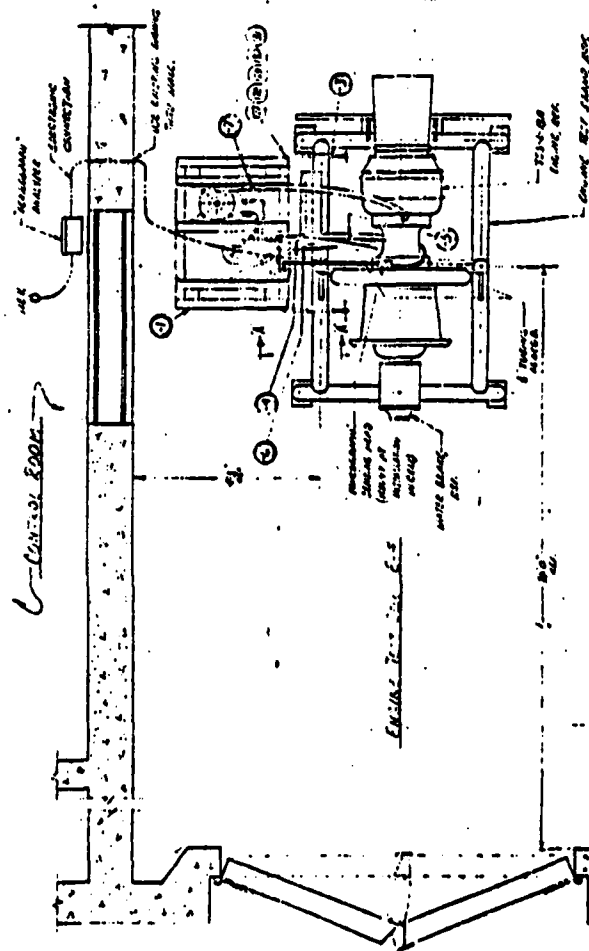
Duplication of UH-1H aircraft lubrication system in CCAD test cell.

1. The test cell lubrication system has a much greater quantity of oil than an aircraft lubrication system and has additional filtration. It also has temperature control for both heating and cooling to maintain a constant oil in temperature. To realistically test the characteristics of the modified MIL-L-23699C oil, it was decided to use a system developed for a previous project which duplicates the aircraft oil system. This system was designed and used during a ferrograph analyzer test.

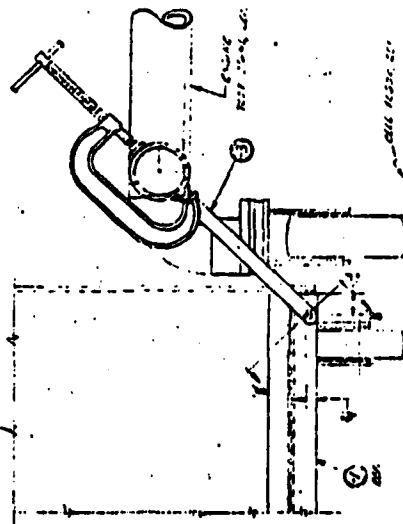
2. The design of a portable lubrication system that duplicates the UH-1H aircraft system, in both function and oil capacity (three gallons), was built. Figure 1 is a drawing of test cell installation; Figures 2 and 3 are photographs of test cell with engine installed; Figure 4 is the control room.



Section 8-B



Testi di San Vito

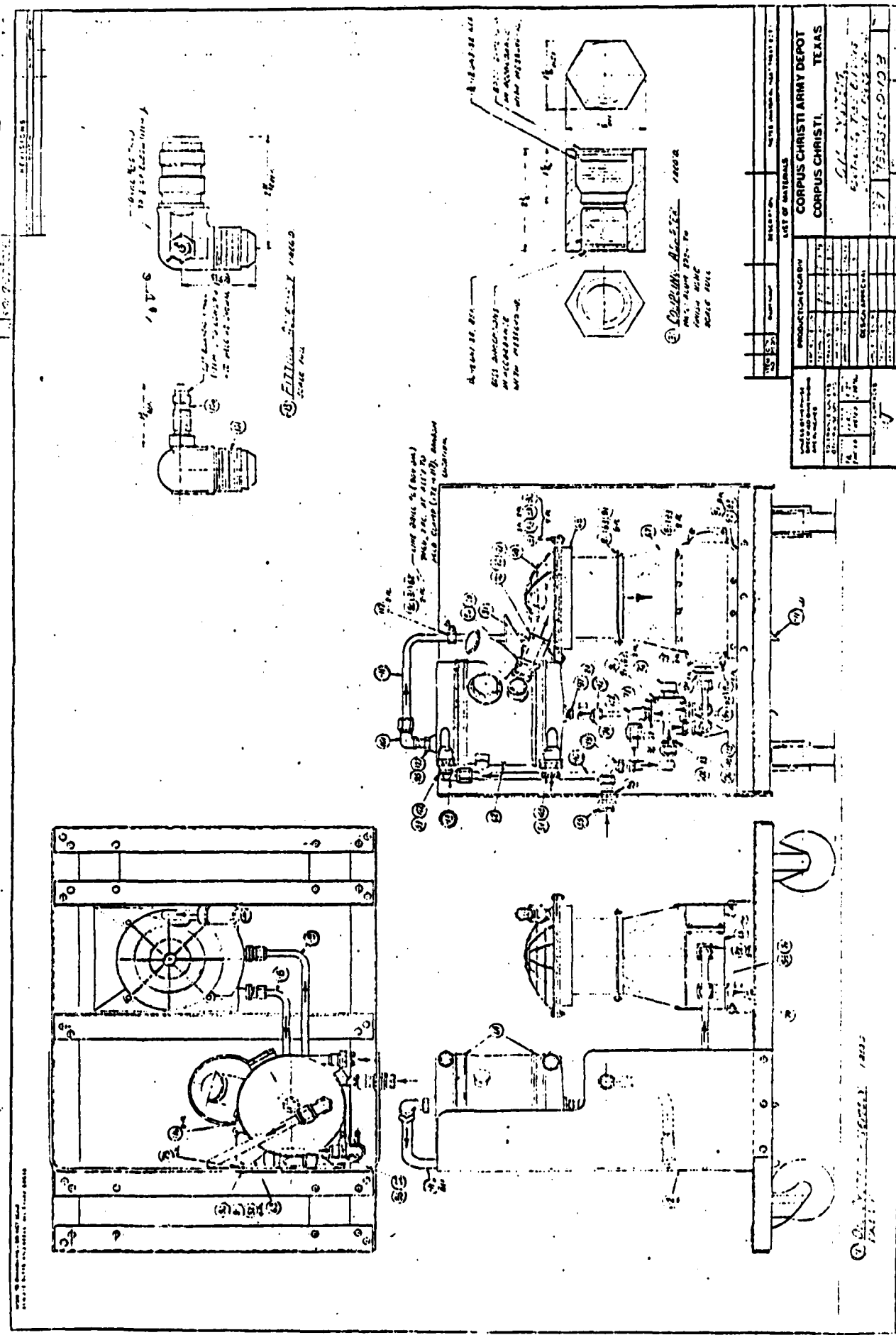


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FIGURE A

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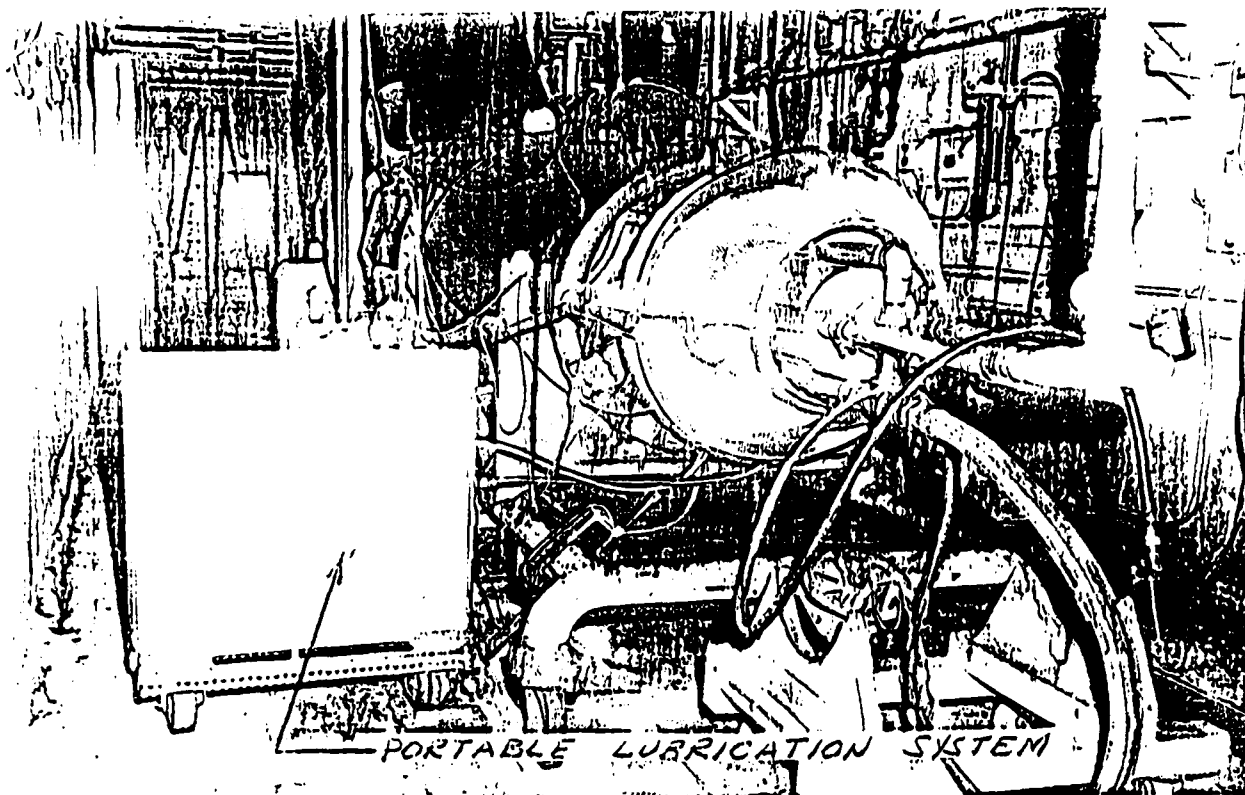


FIGURE A-2

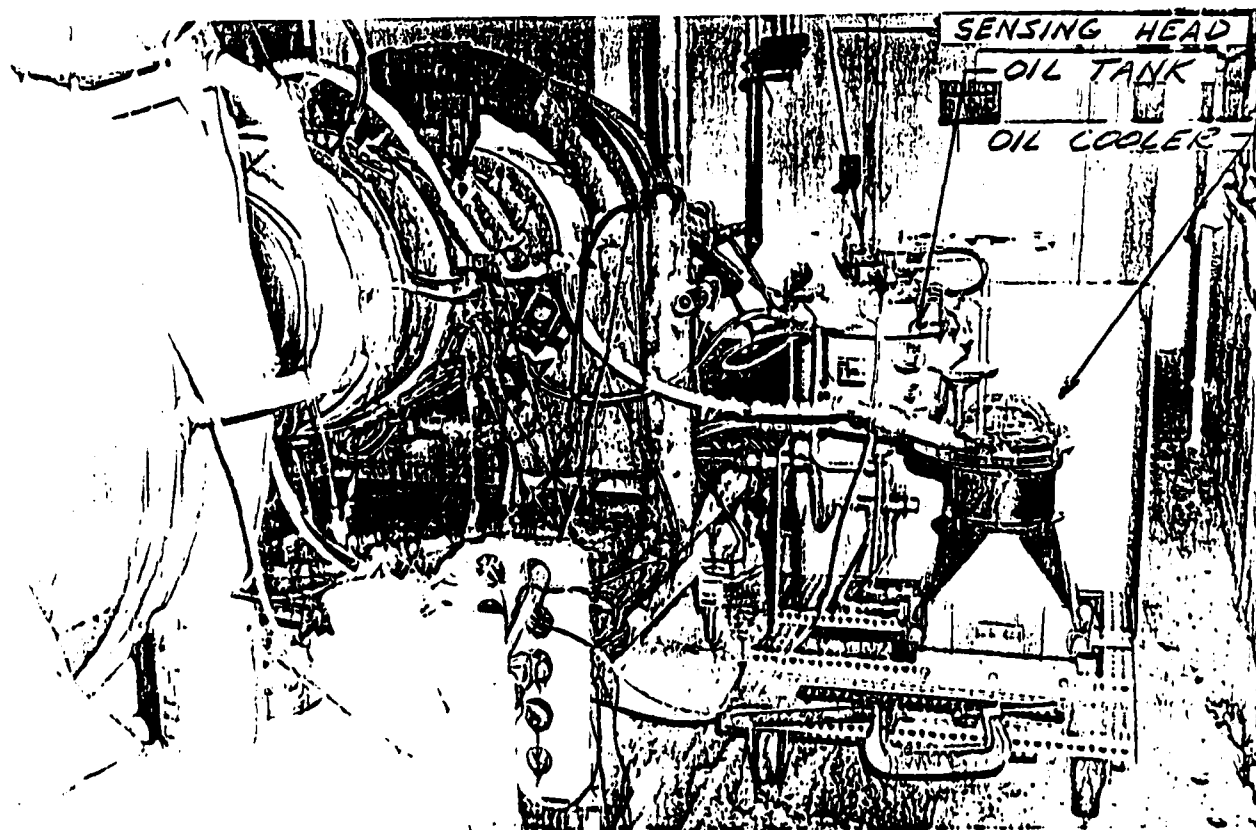


FIGURE A-3

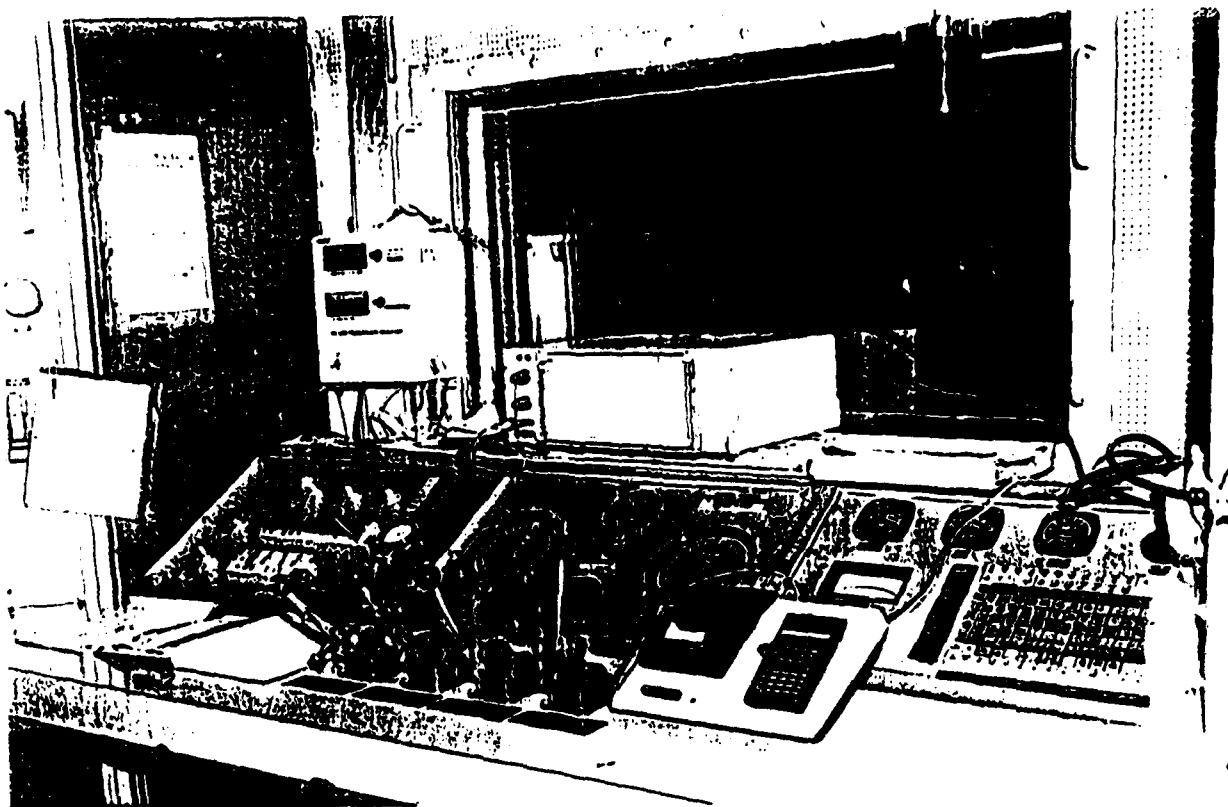


FIGURE A-4

Attachment B

PROJECT ENGINEERING INSTRUCTION		FILE CODE T53-T	PEI NR. . MEEP-6299
PEI TITLE Assembly, Qualification Test and Dis- of T53-L13B Engine		PAGE 1 of 2	DATE 08 Sep 80
PROJECT TITLE Qualification of Turbine Engine Blades (MEEP-6297)		REASON FOR PROJECT	
PREPARED BY BILLY G. WILSON <i>Billy Wilson</i>		OFFICE SYMBOL DRSTS-MEEP	TELE. EXT. 4232/3414
		BASIC V.O. NR.	

STATEMENT OF WORK:

1. Assemble and test T53-L13B engine S/N K-117 per following instructions using the simulated oil system developed in project MEEP-5477.
2. The oil system will be disassembled and all parts cleaned and flushed.
3. Reassemble oil system and cap all lines.
4. Disassemble test engine as required to replace all main shaft seals and install the test parts listed below:
 - a. Steel impeller housing P/N 1-101-370-03.
 - b. 1st stage sealing disc P/N 1-100-135-03.
 - c. 1st and 2nd stage gas producer turbine blades.
5. First and second stage gas producer turbine wheels will have half test blades and half new blades from supply. Blades will be weighed and paired such that the test blades and the new blades are alternately placed in each turbine disc.

NOTE

If test blades do not have any special markings for identification they will be identified using a vibropeen marker. An "A" will be marked on the forward face of the root area.

6. A 150 hour qualification test will be conducted in accordance with Lycoming Specification XTS 313.4.1C with the following special instructions:
 - a. Power settings will be established where possible from TIT maximum limit rather than SFC.
 - b. Oil sample will be submitted to the laboratory at the end of each work shift. (Approximately six (6) hours of engine operation). Samples will be numbered and records maintained to show operation time at each sample. Laboratory will provide spectrographic report on each sample and overall analysis at the end of test.

Paul

7. Two quarts of oil will be taken from lubrication system, immediately upon completion of test, and prepared for shipment.
8. Test engine will be disassembled to allow evaluation of main shaft seals and turbine blades.
9. Test blades (as received from manufacture) will be dimensionally and metalurgically checked by the laboratory. A report is required. Further laboratory assistance will be required to evaluate the tested blades.



WILLETT H. HAGGERTY

Chief, TSARCOM Engr Spt Br @ CCAD

APPENDIX C-1

PRINTED 09/06/81 10 25 54 PAGE 1 OF 2

GAS TURBINE ENGINE TEST LOG SHEET

KIN: 1026J300242

TEST ACTIVITY
CORPUS CHRISTI ARMY DEPOT SER. NO. SPLTST STAND NO. 04 PRE-OTL 81016 OPERATORS (OPERATOR)
CORPUS CHRISTI, TEXAS SEQ. NO. 0322-1999 TEST NUMBER 1 REJECTED 81016 GUNZALEZ, S. G. GUNZALEZ, S. G.
TYPE TEST- RHOOR TYPE/MOD. T53-L13B RUN TIME 3 07 INSPECTOR NUMBER

PUR SETTING	GI	FA	B/B	75%	MRP	MRP	MIL
MODE	M	M	M	M	M	M	M
TIME OF DAY	1337	1345	1106	1229	1321	1315	
ELAPSED TIME	15	12	05	08	12	31	
PWR LVR ANGLE	25	40	60	100	100	100	
N1 SPEED	51.0	66.6	61.3	93.1	97.2	99.2	
N1 SPEED REF	27.3	44.5	71.7	92.5	96.7	98.9	
N2 SPEED	1090	1870	3446	68.7	90.3	94.6	
LOAD	40	110		19950	13180	14360	
SWP TARGET	31	87	257	904	1232	1400	
SWP ACTUAL	696	889	697	920	1240	1418	
SWP REFERRED				902	1219	1396	
MGT ACTUAL				976	1046	1083	
MGT REFERRED				957	1032	1074	
T11 ACTUAL				1538	1660	1724	
T11 REFERRED				1511	1640	1712	
COMP IN TEMP	66	66	69	66	64	62	
COMP OUT TEMP	190	269	365	490	525	540	
OIL IN TEMP	190	192	196	196	197	196	
OIL TEMP BULB	193	194	196	195	198	197	
OIL OUT TEMP	202	203	206	224	230	234	
02 IN TEMP	234	246	287	337	343	356	
03 IN TEMP	231	243	287	314	314	323	
FUEL IN TEMP	65	65	65	65	65	65	
TURBOCHARGER	5.3	6.7	15.5	50.0	60.3	65.5	
GEARBOX PRESS	1	1	3	7	8	9	
OIL IN PRESS	3.0	3.0	2.8	2.6	2.6	2.6	
OIL SCAV PRES	32.0	51.0	55.0	56.0	57.0	58.0	
FLTR OUT PRES	43.0	65.0	70.0	67.0	68.0	69.0	
TURBO BOOST	123	126	143	131	134	135	
FUEL IN PRESS	34	34	29	34	32	32	
FUEL PUMP #1	285	325	355	400	452	508	
FUEL PUMP #2	285	325	355	400	462	508	
FUEL MAN PRES	11	25	65	215	305	365	
BAROMETER	30.30	30.30	30.30	30.30	30.30	30.30	
BURNER PRESS	22	41	78	145	169	178	
B/W DELTA PRESS	1.2	2.1	3.9	10.3	12.4	13.4	
FUEL FLOW	136	263	355	619	749	820	
FUEL FLOW REF				607	736	807	
ENG FUEL FLOW		119	3090	3185	3190	3205	
OIL FLOW	2165	2710	3090	3185	3190	3205	
VIBRATION #1	.20	.20	.40	.30	.20	.20	
VIBRATION #2	.30	.50	1.00	.40	.30	.60	
VIBRATION #3	.60	.60	4.20	3.70	2.10	2.20	
VIBRATION #4	.20	.20	.30	.30	.30	.30	

THIS ENGINE WILL PRODUCE RATED POWER AT 99.02% SPEED, 1075F/574C MET, AND 60.0 PSI TORQUE AT STANDARD DAY SEA LEVEL COND.
ANY QUESTIONS CONCERNING THIS ENGINE LOG SHEET MAY BE DIRECTED TO AUTOMIN 861-2651/3954.

PRINTED 09/06/81, 10 27.59 PAGE 2 OF 2

GAS TURBINE ENGINE TEST LOG SHEET

RUN 102RJ300242

OIL MIL-L-23699 FUEL MIL-J-5624 JP-4
SPECIFIC GRAVITY @ 60° .749

10 LIMIT MODIFICATION * M

SEQ. NO. 0322.1999 REC. NO. 1 O/G S/N 662AM5011 F/C S/N 662AS126

9 LIMIT TECH DATA SET

SER. NO. SPLITST

CURVE TECH DATA SET

S/S START STOP START STOP START STOP

MGT 987 687

ET 27.1 65.3 23.0 43.5

TOD 1007 1130 1206 1350

MEED BAND UPENS AT ZHI ZHI TEMP WF PR TOD ET

80.3 63.6 65 330 68 1106 :05

OS GOV STOPS HIGH WF ZHI LOU WF ZHI TOD ET

814 100.5 508 76.0 1231 :01

TOV CHECKS ZHI WF TEMP TOD ET

A. 79.3 293 66 BEGINS TO OPEN 1214 :05

B. 94.2 650 65 FULLY OPEN

C. 93.6 633 65 BEGINS TO CLOSE

D. 78.6 278 66 FULLY CLOSED

E. 79.3 293 66 BEGINS TO OPEN

ACCEL CHECKS ZHI SECS EGT TOD ET

G1 TO 98.1 7.6 1144 1324 :06

F1 TO 98.1 3.3 1085

V10 ZHI ZHI V1 V2 V3 V4 TOD ET

75.0 75.0 .30 .50 2.20 .30 1106 :04

80.0 80.0 .20 .50 2.60 .30

85.0 97.3 .30 .60 2.80 .30

90.0 94.8 .20 .60 2.30 .40

90.0 97.3 .30 .60 2.30 .30

90.0 100.4 .20 .50 2.10 .30

95.0 97.3 .30 .60 2.30 .30

98.0 97.3 .20 .40 2.60 .30

OIL CONSUMPTION .006 PPH

ANTI-ICE OPERATION 46.0 PSI

ANTI-ICE CUSTOMER AIR CHECK OK

WAVE-OFF NET WITH 20.5 IN. H2O ON P1 OK

PRV INITIAL SETTING 3.0 PRV FINAL SETTING 3.0

ICV ACTUATION ROD ADJUSTMENT NONE

ANY QUESTIONS CONCERNING THIS ENGINE LOG SHEET MAY BE DIRECTED TO AUTOVON 661-2651/3954.

UNIT		DATE		TIME		LOCATION		WEATHER		MOON		WIND		TEMP		PRESS		HUMID		VISIB		CLOUDS		SEA		SWELL		WAVE		ICE		SUN		MOON		PLANET		STAR		METEOR		COMET		AURORA		OTHER		REMARKS	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

UNIT: 101

DATE: 10/10/10

TIME: 10:10

LOCATION: 101010

WEATHER: 101010

MOON: 101010

WIND: 101010

TEMP: 101010

PRESS: 101010

HUMID: 101010

VISIB: 101010

CLOUDS: 101010

SEA: 101010

SWELL: 101010

WAVE: 101010

ICE: 101010

SUN: 101010

MOON: 101010

PLANET: 101010

STAR: 101010

METEOR: 101010

COMET: 101010

AURORA: 101010

OTHER: 101010

REMARKS: 101010

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COMET: 101010

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OTHER: 101010

REMARKS: 101010

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APPENDIX D-1

APPENDIX E-1

TEST NO. 1111
 CUPUS 701511 ARMY DETCT
 CUPUS CHRISTIA, TEXAS
 TYPE TEST - MINOR

SER. NO. 0355-1999
 SER. NO. 0355-1999
 TYPE MOD. 153-1138

OPERATING LOG SHEET NO. 61029
 DATA DATE 61029
 INSPECTOR NUMBER

PWR SETTING	GI	FA	B/R	75X	MRP	MIL
MODE	M	M	M	M	M	M
TIME OF DAY	1039	1043	1050	1226	1219	1115
ELAPSED TIME	04	04	06	06	06	100
PWR LVR ANGLE	25	40	65	100	100	100
M1 SPEED	50.2	66.9	80.7	94.3	98.1	99.9
M1 SPEED REF				93.8	97.1	99.1
M2 SPEED	22.2	32.7	55.5	81.0	99.6	94.0
LOAD	1150	2440	4030	10850	12800	14000
SWP TARGET	40	110		905	1183	1356
SWP ACTUAL	27	63	233	915	1200	1371
SWP REFERRED				905	1181	1353
MGT ACTUAL	897	678	670	1051	1101	1131
MGT REFERRED				1034	1069	1107
TIT ACTUAL				1579	1667	1757
TIT REFERRED				1556	1643	1723
COMP IN TEMP	76	78	73	65	70	67
COMP OUT TEMP	200	289	378	525	552	580
OIL IN TEMP	190	192	196	196	197	193
OIL OUT TEMP	192	193	198	198	192	193
#2 MNG TEMP	198	225	270	336	354	366
#3 MNG TEMP	200	219	269	320	336	332
FUEL IN TEMP	65	66	62	65	66	65
TURBOMETER	6.6	12.6	19.6	50.9	59.8	65.5
LEGATOR PRESS	.5	.1	.1	.7	.7	.7
OIL IN PRESS	1.1	2.0	1.2	2.0	1.2	2.0
OIL SCAP PRES	32.0	51.0	53.0	56.0	57.0	58.0
FLTR OUT PRES	50.0	74.0	84.0	87.0	88.0	89.0
TURBO MOUNT	119	122	129	133	136	136
FUEL IN PRESS	33	33	32	32	31	32
FUEL PUMP #1	260	325	354	406	468	522
FUEL PUMP #2	260	326	355	406	468	522
FUEL MAN PRES	12	25	56	225	310	363
BAROMETER	30.08	30.08	30.08	30.08	30.08	30.08
BURNER PRESS	19	39	70	141	162	174
B/W DELTA PRESS	1.3	2.0	4.4	10.3	12.2	13.2
FUEL FLOW	136	206	304	626	740	820
FUEL FLOW REF				619	728	809
EMC FUEL FLOW		118				890
OIL FLOW	2180	2710	3090	3185	3190	3210
VIBRATION #1	.20	.20	.40	.20	.20	.40
VIBRATION #2	.30	.20	2.70	.60	.50	.50
VIBRATION #3	.60	1.00	1.50	2.90	1.90	1.90
VIBRATION #4	.30	.20	.30	.40	.40	.60

THIS ENGINE WILL PRODUCE RATED POWER AT 99.72% SPEED/1110F/599C MGT AND 62.4 PSI TORQUE AT STANDARD DAY SEA LEVEL (LND).

ANY QUESTIONS CONCERNING THIS ENGINE LOG SHEET MAY BE DIRECTED TO AUTOVON 861-2651/3954.

FILE 200-1000000

RIN T02RJ30104Z GAS TURBINE ENGINE TEST DISCREPANCIES PRINTED 09/06/81 10:24.17 PAGE 1 OF 1

SER. NO. SPLIST SER. NO. 0322.1999 RUN NO. 1 RUN DATE 81016

DISCREPANCY BASIC S/S G1 FI 75Z NRP MAX MIL ACC/MO OCN B/B IGV CUT VIB DSC SPL

UNLISTED DISCREPANCY 207 X

SII 9 June 81 041610Z UNK POWR

DATE OF TEST 81016 GAS TURBINE ENGINE PERFORMANCE ANALYSIS RIN T02RJ30034Z
153-L13

	2NI	UF	PR	DA	TIT	NCT	UA/WF	UA/NI	DT/UA	PS/UA	CONPE
ACTUAL	93.1	619	5.79	10.44	1536	976	60.71	6.73	40.61	13.69	.602
936 HP	93.0	621	5.86	10.56	1525	965	60.66	6.77	40.19	13.96	.606
STD LIM		425									
PCT DEV	.53-	1.97	1.01-	2.42-	2.14	1.15	4.26-	2.03-	1.69-	1.16	1.64
ACTUAL	97.2	749	6.56	11.46	1668	1046	55.17	7.09	40.16	14.72	.623
1246 HP	97.0	747	6.56	11.43	1652	1039	55.06	7.07	40.07	14.61	.622
STD LIM		750			1659	1098					
PCT DEV	.51-	1.06	1.79-	2.09-	1.85	1.76	3.92-	2.35-	.79-	.76	.98
ACTUAL	99.2	820	6.87	11.96	1724	1063	52.50	7.23	39.97	14.68	.625
1460 HP	99.0	809	6.95	11.86	1714	1075	52.66	7.20	40.07	14.96	.628
STD LIM	101.0	812			1720	1120					
PCT DEV	.50-	.87	1.84-	3.10-	1.72	2.09	3.94-	2.57-	.27-	1.01	.65
	1.000	1.000	.996	.998	1.000	1.000					
							CORRELATION COEFFICIENTS				

SER. NO. 0322.1999 SER. NO. SPLIST CELL NO. 04 RUN NO. 1

GP1X .00 GP2X .00 PTIX .00 PT2X .00

REQUEST FOR AND RESULTS OF TESTS				PAGE NO	NO OF PAGES
SECTION A - REQUEST FOR TEST					
1 TO: (Include ZIP Code) ENGINE DIVISION SPECTROGRAPHIC BRANCH			2 FROM: (Include ZIP Code) D/MAINTENANCE ENGINE DIVISION ENGINE ASSEMBLY BRANCH		
3 CONTRACTOR AND ADDRESS (Include ZIP Code) 1. BEFORE START 2. AFTER 1ST SHUTDOWN 3. AFTER 1ST NRP 4. AFTER 2ND NRP 5. AFTER TRANSIENT CK. 6. AFTER 75% 7. AFTER LAST SHUTDOWN			4 MANUFACTURING PLANT NAME AND ADDRESS (Include ZIP Code) ENGINE TEST CELL# 4		
5 CONTRACT NUMBER AND ITEM AND/OR PROJECT F53 ENGINE PCN-Z94QC5		6 SAMPLE NUMBER		7 TEST NO	
8 REASON FOR SUBMITTAL SPECTROGRAPHIC OIL ANALYSIS CCAD REG 750-1		9 DATE SUBMITTED 1026			
10 MATERIAL TO BE TESTED OIL		11 QUANTITY SUBMITTED 7- BOTTLES		12 SPEC. & AMEND AND/OR DRAWING NO. & REV FOR SAMPLE & DATE PE-5-L957	
13 PURCHASED FROM OR SOURCE ENGINE TEST CELLS		14 SHIPMENT METHOD		15 DATE SAMPLED AND SUBMITTED BY D. RODRIGUEZ 26 JAN 81	
16 REMARKS AND/OR SPECIAL INSTRUCTIONS AND/OR WAIVERS. ENG(NE SERIAL NUMBER: K-117 SPECIAL ENGINE ENGINE SEQUENCE : K-117 <div style="text-align: center; font-size: 1.5em; margin-top: 10px;">Cycle #13</div>					
17 SEND REPORT OF TEST TO TEST CONTROL SECTION 5CC2F STOP # 25 TEST CELL OFFICE X-4587 OR 2313					
SECTION B - RESULTS OF TEST (Continue on plain white paper if more space is required)					
1 DATE SAMPLE RECEIVED		2 DATE RESULTS REPORTED		3 LAB REPORT NUMBER 81 - 085	
4 TEST PERFORMED SPECTROGRAPHIC OIL ANALYSIS		5 RESULTS OF TEST NORMAL		6 SAMPLE RESULT REQUIREMENTS	
DATE JAN 26, 1982		TYPED NAME AND TITLE OF PERSON CONDUCTING TEST Stephen Tosto, Chemist		SIGNATURE <i>Stephen Tosto</i>	

DD FORM 1222

REPLACES DD FORM 1222, 1 JUL 58, WHICH IS OBSOLETE.

1st CYCLE

81-069															
FE	AG	AL	BE	CR	CU	MG	NA	NI	PB	SI	SN	TI	H	BA	CD
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25 CYCLE

81-103															
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002	000	000	000	000	000	003	003	000	000	003	005	002	000	000	000
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REQUEST FOR AND RESULTS OF TESTS						PAGE NO	NO OF PAGES
SECTION A - REQUEST FOR TEST							
1. TO: (Include ZIP Code) LABORATORY DIVISION MILITARY BRANCH				2. FROM: (Include ZIP Code) ENGINE Supply Branch ASSEMBLY SECTION			
3. CONTRACT OR ANY ADDRESS (Include ZIP Code) PCN - Z44405				4. MANUFACTURING PLANT NAME AND ADDRESS (Include ZIP Code) C.C.A.D			
5. CONTRACT NUMBER		6. SAMPLE NUMBER		7. LOT NO		8. REASON FOR SUBMITTAL	
9. END ITEM AND/OR PROJECT TS3 ENGINE				FOAM TEST		9. DATE SUBMITTED 14 XI	
10. MATERIAL TO BE TESTED OIL		10a. QUANTITY SUBMITTED 1-QT		11. QUANTITY REPRESENTED —		12. SPEC. & AMEND AND/OR DRAWING NO. & REV FOR SAMPLE & DATE PE-5-L957	
13. PURCHASED FROM OR SOURCE ENGINE TEST CELL #4		14. SHIPMENT METHOD —		15. DATE SAMPLED AND SUBMITTED BY 29 JAN 81 D Rodriguez			
16. REMARKS AND/OR SPECIAL INSTRUCTIONS AND/OR WAIVERS. Perform Foam TEST on Sample Provided. 75 hours							
17. SEND REPORT OF TEST TO ENG- PCN CAL 5007E STEP #25 X-4557 TEST CELL OFFICE 2512							
SECTION B - RESULTS OF TEST (Continue on plain white paper if more space is required)							
1. DATE SAMPLE RECEIVED 29 Jan 81		2. DATE RESULTS REPORTED			3. LAB REPORT NUMBER 81C0075		
4. TEST PERFORMED		RESULTS OF TEST		SAMPLE RESULT		REQUIREMENTS	
Foaming characteristics of Mil-L-23699C Lubricating Oil ASTM D 892-72							
Test Results		(Foaming Tendency) Foam value in ml, at end of 5 min blowing period		(Foam stability) Foam value in ml, at the end of 10 min settling period		Maximum - 5 min.	
Sequence I		5 ml		25 ml		0 ml	
Sequence II		8 ml		25 ml		0 ml	
Sequence III		5 ml		25 ml		0 ml	
DATE 13 Feb 81		TYPED NAME AND TITLE OF PERSON CONDUCTING TEST John B. Bullington, Chemist			SIGNATURE E. Charles Wilson, C/Chem Br		

REQUEST FOR AND RESULTS OF TESTS					PAGE NO.	NO. OF PAGES
SECTION A - REQUEST FOR TEST						
1 TO: (Include ZIP Code) LABORATORY DIVISION CHEMICAL BRANCH			2 FROM: (Include ZIP Code) D/MAINTENANCE ENGINE DIVISION ENGINE SUPPLY BR			
3 CONTRACTOR AND ADDRESS (Include ZIP Code)			4 MANUFACTURING PLANT NAME AND ADDRESS (Include ZIP Code) TEST CELL #4			
5 CONTRACT NUMBER			6 P.O. NUMBER			
7 END ITEM AND/OR PROJECT T53-Engine PCN Z94QC5		8 SAMPLE NUMBER	9 LOT NO	10 REASON FOR SUBMITTAL Foam Test	11 DATE SUBMITTED 1030	
12 MATERIAL TO BE TESTED Oil	13 QUANTITY SUBMITTED 1 Qt	14 QUANTITY REPRESENTED		15 SPEC. & AMEND AND/OR DRAWING NO. & REV FOR SAMPLE & DATE		
16 PURCHASED FROM OR SOURCE C.C.A.C. ENGINE TEST CELLS		17 SHIPMENT METHOD		18 DATE SAMPLED AND SUBMITTED BY 29 Jan 81 D. Rodriguez		
19 REMARKS AND/OR SPECIAL INSTRUCTIONS AND/OR WAIVERS. Engine S/N - N/A - Special Engine Engine SEQ - K117 (End of 150 Hour Test)						
20 SEND REPORT OF TEST TO Test Control Section 5CC2E Stop #25 Test Cell Office X2313 X4587						
SECTION B - RESULTS OF TEST (Continue on plain white paper if more space is required)						
1 DATE SAMPLE RECEIVED 30 Jan 81		2 DATE RESULTS REPORTED			3 LAB REPORT NUMBER 81C0080	
4 TEST PERFORMED	5 RESULTS OF TEST	6 SAMPLE RESULT	7 REQUIREMENTS			
Foaming characteristics of Mil-L-23699C Lubricating Oil ASTM D892-72						
		(Foaming Tendency)		(Foam stability)		
		Foam value in ml, at end of 5 min. blowing period		Foam value in ml, at the end of 10 min. settling period		
Test Results		Maximum - 5 min.				
Sequence I	2 ml	25 ml	0 ml			
Sequence II	10 ml	25 ml	0 ml			
Sequence III	3 ml	25 ml	0 ml			
DATE 13 Feb 81	TYPED NAME AND TITLE OF PERSON CONDUCTING TEST John B. Bullington, Chemist			SIGNATURE E. Charles Wilson, C/Chem Br		

DD FORM 1222

REPLACES DD FORM 1222, 1 JUL 58, WHICH IS OBSOLETE.

Prod 1

END

DATE
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